

2.2 DESCRIPTION OF THE ALTERNATIVE MANAGEMENT ACTIONS

Table 2.0.1 Summary of Alternative Management Actions for Monitoring Time-area Closures in the Pacific Coast Groundfish Fishery

ISSUE 1: The Monitoring System	Alternative 1 Status quo	Alternative 2 Declaration reports - from limited entry trawl and fixed gear vessels, and all other commercial and tribal trawl vessels including exempted trawl gears that intend to fish within a conservation area defined for their gear type.		Alternative 3 Basic VMS system with one way communications; declaration reports as described under Alternative 2; VMS operated continuously in EEZ regardless of fishery. (NMFS preferred)	Alternative 4 Upgraded VMS system with 2-way communications; declaration reports as described under Alternative 2; VMS operated continuously in EEZ regardless of fishery.	Alternative 5 Observers with 100% coverage; and declaration reports as described under Alternative 2.
	<ul style="list-style-type: none"> * Limited availability of air and surface craft to monitor conservation areas. * Fish tickets and logbooks used to monitor fishing location 	<ul style="list-style-type: none"> * Same as Alt. 1 plus: * 386 LE , 248 OA exempted trawl & 5 tribal trawl vessels would be required to provide declaration and landing reports * Declaration reports aids in identifying vessels fishing legally in conservation areas from those that are not. 		<ul style="list-style-type: none"> * Same as Alt. 1 & 2 plus: * VMS Unit must be consistent with NMFS standards * Real-time position data would allow enforcement to respond to infractions * Distress signal 	<ul style="list-style-type: none"> * Same as Alt. 1, 2 & 3 plus: * 2-way communications can be used to transmit reports from vessel; to receive operational messages; and to inquire about use of distress signal * Vessel may choose value added services used only by vessel 	<ul style="list-style-type: none"> * Same as Alt. 1 & 2 plus: * Position data can be used as basis for enforcement action * Observer reports could be used to verify vessel activities * Most observer data is beyond the scope of the identified need * Catch composition data would be available to assess the impacts of fishing activities
ISSUE 2: Coverage (Issue 2 applies only when issue 1, alternatives 3, 4 or 5, VMS or observers are selected as the monitoring system)	Alternative 1 Status quo	Alternative 2A All vessels registered to a limited entry permit	Alternative 2B All limited entry vessels that actually fish in EEZ	Alternative 3 All active limited entry, and open access and recreational charter vessels that fish in conservation areas	Alternative 4 All active limited entry vessels and all commercial fishing vessels and recreational charter vessels that fish in conservation areas.	Alternative 5 All active limited entry, open access and recreational charter vessels regardless of where they fish
	<ul style="list-style-type: none"> * Coverage would be voluntary, except for mandatory observer coverage required under the federal observer program 	<ul style="list-style-type: none"> * In 2001, this was 424 vessels including catcher/processors (257 trawl, 140 line, 11 pot , and 16 combined gear) 	<ul style="list-style-type: none"> * In 2001, 386 LE vessels landed groundfish (233 trawl, 129 line & 24 pot vessels) 	<ul style="list-style-type: none"> * LE same as Alt. 2B * OA 2,881 vessels * Recreational charter: 659 vessels - If 100% of WA and 90% of CA & OR vessels identified fish in conservation area, 401 if 100% of WA and 50% of CA & OR fish in conservation area 	<ul style="list-style-type: none"> * LE same as Alt. 2B * OA same as Alt. 3 * Recreational charter same as Alt. 3 * Other commercial fisheries: 132 hagfish (7 vessels), spiny lobster (125) rock crab, sheep crab, surperch, shark,..... 	<ul style="list-style-type: none"> * LE same as Alt. 2B * OA 3,840 vessels * Recreational charter of 724 vessels, with 77 from WA, 232 from OR and 415 from CA
ISSUE 3: VMS Expenditures (Issue 3 applies only when issue 1, alternatives 3 or 4, are selected for the monitoring system)	Alternative 1 Vessel owner pays for all (NMFS preferred)	Alternative 2 Vessel owner pays for VMS transceiver		Alternative 3 NMFS pays for initial VMS transceiver	Alternative 4 NMFS pays for all (Council preferred)	
	<ul style="list-style-type: none"> * Vessel pays costs of purchasing, installing and maintaining VMS transceiver unit *Vessel pays all costs associated with the transmission of data * Does not preclude reimbursement for all or a portion of expenditures 	<ul style="list-style-type: none"> * Vessel would be responsible for paying all costs associated with purchasing, installing and maintaining the VMS transceiver. * NMFS pays for transmission of reports and data * Federal funding not available 		<ul style="list-style-type: none"> * NMFS pays vessel for all or a portion of VMS transceiver * Vessel pays for installation, maintenance and replacement. * Transmission costs paid by vessel * Federal funding not available 	<ul style="list-style-type: none"> * NMFS would be responsible for paying all costs associated with purchasing, installing and maintaining the VMS transceiver unit, as well as the costs associated with the transmission of report and data rom the vessel * Federal funding not currently available 	

ISSUE 1: THE MONITORING SYSTEM This issue defines the types of systems and reporting requirements that could be used to monitor fishing activities to ensure the integrity of groundfish conservation areas. The alternatives below describe three different approaches to a monitoring system including: a declaration system, a VMS program, and fishery Observers.

Alternative 1: Status quo. Do not define a specific monitoring system for managing the integrity of groundfish conservation areas. Do not define reporting requirements for groundfish vessels that are conducting legal fishing activities in conservation areas.

Discussion: Traditional monitoring techniques, including monitoring from air and surface craft, analysis of fish tickets and vessel logbooks would continue to be used to monitor vessel activity in relationship to geographically-defined management areas where fishing activity is restricted. Enforcement resources would continue to be used to identify questionable behavior and locate vessels over a large geographical area and within fishing fleets targeting multiple species.

Alternative 2: Declaration system only. Require the operator of any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, to send a declaration report before leaving port identifying their intent to fish within a conservation area specific to their gear type.

Discussion: As with Alternative 1, traditional monitoring techniques including monitoring from air and surface craft, analysis of fish tickets, and vessel logbooks would continue to be used to monitor vessel activity in relationship to geographically- defined conservation areas where fishing activity is restricted. To assist enforcement in identifying vessels that are legally fishing in conservation areas, the operator of any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, would be required to identify their intent to fish within a conservation area specific to their gear type. A valid declaration report must be received by NMFS before the vessel leaves port. Declaration reports would be sent to NMFS and vessel operators would receive confirmation that could be used to verify that the reporting requirement was met. This reporting requirement would affect approximately 386 limited entry vessels (Tables 3.3.2.1) , 248 open access vessels (Table 3.3.2.3) and 5 tribal vessels. Salmon troll and sport charter vessels are visually unique and would therefore not be required to provide declaration reports.

Alternative 3: Basic VMS system (NMFS and Council preferred alternative). Establish standards for VMS transceiver and mobile communication service providers that are consistent with the VMS standards published on March 31, 1994 at 59 FR 15180 and the specifications published by OLE in the Commerce Business Daily on September 8, 1998 (Appendix A). Any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, would be required to send a declaration report to identify their intent to fish within a conservation area specific to their gear type.

Discussion: This alternative provides for a basic VMS system that would transmit vessel positions, via secured satellite communications, to a central data processing center managed by the NMFS OLE. Because GPS positions provide accuracy to within 50 meters, vessel position data could be used by managers to monitor fleet behavior and by enforcement to identify questionable fishing activity and easily locate individual vessels. One-way communications allow a vessel's position to be sent to NMFS through a communication service provider. It also allows for a distress signal to be sent from the vessel. Although the interval between position fixes and receipt by NMFS is not specified in the national standards, the transceiver units currently available that meet the criteria under this alternative transmit data within approximately 5 minutes of the position fix. This alternative is intended to define minimum requirements and would not preclude a vessel owner from procuring a VMS unit approved by NMFS for the Pacific Coast groundfish fishery that provides additional services and capabilities used exclusively by the vessel owner and operator. It is NMFS intention to approve VMS transceivers and service providers and publish a list of type approved units for the Pacific Coast groundfish fishery. Transceiver manufactures or

communication service providers may continue to submit products or services to NMFS for evaluation based on the published specifications. As necessary, NMFS will publish amendments to the list of approved systems in the Federal Register.

Any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, would be required to send a declaration report to identify their intent to fish within a conservation area specific to their gear. A valid declaration report must be received by NMFS before the vessel leaves port. This notice requirement would affect approximately 386 limited entry vessels (Tables 3.3.2.1), 248 open access vessels (Table 3.3.2.3) and 5 tribal vessels.

VMS transceiver units range in price from approximately \$800 (this is contingent on the low end units being approved by OLE) to \$3,800 per unit, installed. The costs per day for data transmissions is \$1.67-\$5. The annual transmission costs may vary between vessels depending on the number of days fished and the model of transceiver the vessel has purchased (With VMS transceiver units, there is a sleep function, when the vessel is in port, position transmissions are automatically reduced). NMFS will pay for all costs associated with polling (when the processing center queries the transceiver, outside of regular transmissions, for a position report). The costs of installation are minimal because the transceivers can be installed by the vessel operator. Vessels that already have VMS transceiver units installed for other fisheries or personal purposes may use their current unit providing it is a model that has been type approved for the Pacific Coast groundfish fishery and the software has been upgraded to meet the defined requirements.

Alternative 4: Upgraded VMS system. Establish standards for VMS transceiver and mobile communication service providers that are consistent with the final VMS standards published on March 31, 1994, at 59 FR 151180 and the specifications published by OLE in the Commerce Business Daily on September 8, 1998 (Appendix A). In addition to the basic standards described under Alternative 3, the upgraded system would use two-way communications between the vessel and shore such that full or compressed data messages can be transmitted and received by the vessel. Any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, would be required send a declaration report to identify their intent to fish within a conservation area specific to their gear type.

Discussion: This alternative provides for a more advanced VMS system in that it has a message terminal or is attached to a personal commuter. Like Alternative 3, the upgraded system would transmit vessel positions, via secured satellite communications, to a central data processing center managed by the NMFS OLE. Vessel position data could be used by managers to monitor fleet behavior and by enforcement to identify questionable fishing activity and easily locate individual vessels. In addition, VMS systems with two-way satellite communications capability can be used to report suspicious activities directly to State or Federal enforcement officers and the U. S. Coast Guard. Two-way messaging capability allows the necessary position reports to be sent from the vessel, and also has the capability for the vessel to receive operational messages (changes in regulations, weather reports, safety messages, etc). These communications can be used to solve problems that might otherwise result in an enforcement action. The addition of a manual input device aboard the vessel (keyboard, hand-held terminal, or PC) adds to the catch reporting capability. Two-way communications allow for a distress signal to be sent from the vessel, and also allows for a response or inquiry to be sent back to the vessel. GPS positions provides accuracy to within 50 meters. Accuracy is particularly important given there are many areas where fishing incursions into the conservation areas could occur over very short distances and result in a heavy impact on the resources being protected by the restricted areas. Having a near real-time interval between the position fix and when NMFS receives the report, would allow enforcement to respond to an apparent infraction in near real-time, if resources were available.

These transceiver units range in price from approximately \$2,700 to \$5,295 per unit, installed. The costs per day for data transmissions is \$1-\$3.5. The annual transmission costs vary considerably between vessels depending on the number of days fished and proximity of the activities to the conservation areas.

NMFS will pay for all costs associated with polling. The costs of installation are minimal because the transceivers can be installed by the vessel operator. Like Alternative 3, vessels that already have VMS transceiver units installed for other fisheries or business purposes may use their current unit providing it is a model that has been type approved for the Pacific Coast groundfish fishery and the software has been upgraded to meet the defined requirements.

In addition to the VMS requirements, any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, would be required to send a declaration report to identify their intent to fish within a conservation area specific to their gear type. A valid declaration report must be received by NMFS before the vessel leaves port. This reporting requirement would affect approximately 386 limited entry vessels (Tables 3.3.2.1) , 248 open access vessels (Table 3.3.2.3) and 5 tribal vessels.

Alternative 5: Observers. Require vessels to carry observers to monitor vessel activity in relation to groundfish conservation areas. Require operators of any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, to send a declaration report to identify their intent to fish within a conservation area specific to their gear type.

Discussion: Observers are a uniformly trained group of scientific technicians who are stationed aboard vessels to observe fishing activities. Observers gather independent conservation and management data that is too burdensome for vessel personnel to collect and which would otherwise not be available for managing the fisheries. Although the observers do not have a direct role in fisheries compliance, data on fishing effort, which includes fishing location, could be used to in an enforcement action. In 2001, NMFS implemented a Federal observer program in the Pacific Coast groundfish fishery as a viable means to collect much-needed data on at-sea discards. In 2002, approximately 30 observers were stationed along the coast from Bellingham, WA to Morro Bay, CA. In addition, observers have been placed on a voluntary basis aboard offshore catcher/processors and processing vessels in the Pacific whiting fishery to gather total catch, bycatch, and biological data since 1991. Observers carried by vessels under this alternative would be funded by a pay-as-you-go system similar that used by the processing vessels in the whiting fishery. In a pay-as-you-go system the vessel owner is responsible for making arrangement with an observer employment firm who provides the required observer services and for paying all associated costs.

Under this alternative, observers would be available to collect information that could be used to monitor fishing activity in relationship to conservation areas. Supporting these additional observers, would most likely require a substantial expansion of the current observer program infrastructure. Because observer data is processed after a fishing trip is completed, the data would not be available in realtime. Although critical for management of the fishery, much of the observer's sampling and data are beyond the scope of the identified need and are not directly applicable to monitoring fishing activities to ensure the integrity of groundfish conservation areas.

In addition to the observer requirements, any vessel registered to a limited entry permit, and any other commercial or tribal vessel using trawl gear; including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber, would be required to send a declaration report to identify their intent to fish within a conservation area specific to their gear type. A valid declaration report must be received by NMFS before the vessel leaves port. This reporting requirement would affect approximately 386 limited entry vessels (Tables 3.3.2.1) , 248 open access vessels (Table 3.3.2.3) and 5 tribal vessels.

ISSUE 2: COVERAGE This issue identifies the sectors of the groundfish fleet that would be required to have a VMS or observer monitoring system, as identified under issue 1, Alternatives 3,4, and 5, in place in order to participate in Pacific Coast groundfish fishery.

Alternative 1: Status quo. Do not specify mandatory coverage requirements for a monitoring system.

Discussion: Under the existing regulations vessels could elect to voluntarily carry a VMS transceiver unit and provide position reports when they choose. Vessels would be expected to carry a Federal observer when randomly selected from the overall of vessels. In 2002, approximately 30 observers were stationed along the coast from Bellingham, WA to Morro Bay, CA. If coverage in 2003 were allocated in the same proportions as 2002, approximately 75% of observer time would be dedicated to cover the limited entry trawl fishery with the remaining 25% of observer time used to collect data on fixed gear and open access. Observers would continue to be placed on a voluntary basis on board offshore catcher/processors and mothership processing vessels in the Pacific whiting fishery.

Alternative 2A: All vessels registered to a limited entry permit. Beginning in 2003, require all trawl and fixed gear vessels registered to limited entry permits to have VMS or an observer as specified under issue 1, Alternatives 3,4, and 5. Vessels would be required to have VMS transceiver units or observers on board at all times regardless of the fishery.

Discussion: This alternative would affect all vessels registered to limited entry permits beginning in 2003, regardless of where they fish or if they fished in the WOC. In 2001, there were 424 vessels with Pacific Coast groundfish limited entry permits, of which 257 were trawl vessels, 140 were longline vessels and, 11 were trap vessels, and 16 were combined gear permits (Tables 3.3.2.1). Since 2001, the number of vessels registered for use with limited entry permits has decreased because of implementation of the permit stacking program for sablefish-endorsed limited entry fixed gear permits.

This alternative would allow enforcement to effectively monitor limited entry trawl vessels for unlawful incursions into conservation areas while allowing legal incursions, such as midwater trawling, for Pacific whiting, yellowtail and widow rockfish and non-groundfish target fisheries, to occur. Vessels registered to a limited entry permit would be required to have either an operable VMS unit or an observer on board. A notable number of limited entry vessels also participate in non-groundfish fisheries, such as shrimp and prawn trawl fisheries, troll albacore and troll salmon fisheries, and the pot fisheries for crab. These fisheries would continue to occur in the conservation area. Vessels would be required to have either an operable VMS unit or an observer on board whenever the vessel was used to fish in the EEZ of the states of Washington, Oregon or California.

Alternative 2B: All vessels registered to a limited entry permit and that fish for groundfish Beginning in 2003, require all trawl and fixed gear vessels registered to limited entry permits to have either VMS or an observer, as specified under issue 1, Alternatives 3,4, and 5 before the vessel can be used to fish in the Pacific Coast groundfish fishery. Vessels would be required to have a VMS transceiver or an observer on board whenever the vessel was operating in the EEZ of the states of Washington, Oregon or California.

Discussion: This alternative is the same as alternative 2A except that it would not require VMS or observers on vessels registered to limited entry permits unless they are used to harvest groundfish during the fishing year. This alternative is different from 2A in that it recognizes that not all vessels registered to a limited entry permit are used to harvest groundfish and therefore only requires vessels that fish to incur the cost of purchasing and installing a VMS unit. In 2001, there were 386 of the 424 vessels registered to limited entry permits actually fished in the Pacific Coast groundfish fishery. Of these 386 vessels, 233 were trawl vessels, 129 were longline vessels, and 24 were trap vessels (Tables 3.3.2.1). Vessels would be required to have a VMS transceiver or an observer on board whenever the vessel was operating in the EEZ of the states of Washington, Oregon or California.

NOTE TO THE READER: The Council and NMFS preferred alternative of all vessels registered to a limited entry permit and that fish in the EEZ off Washington, Oregon, and California falls between alternatives 2A and 2B. Under the preferred alternative all trawl and fixed gear vessels registered to a limited entry permits would be required to have either VMS, as specified under issue 1 Alternative 3, before they can fish in any fishery in the EEZ off Washington, Oregon, and California. Vessels would be

required to have VMS transceiver unit on board at all times regardless of the fishery and regardless if they target or landed groundfish. The number of limited entry vessels affected by the alternative falls between 386 (Alternative 2B) and 424 (Alternative 2A) and is not specifically analyzed in this analysis because the exact number is unknown. For the purposes of this analysis 424 vessels, as would be affected under Alternative 2A.

Alternative 3: All vessels registered to limited entry permits regardless of where fishing occurs; and all open access and recreational charter vessels that fish in the conservation areas. Beginning in 2003, require all trawl and fixed gear vessels registered to a limited entry permit to have either VMS or an observer as specified under issue 1, Alternatives 3,4,and 5 before they can fish in the Pacific Coast groundfish fishery. By 2004, begin phasing in VMS or an observer requirement for open access vessels (including exempted gears) that fish within a conservation area. Open access fisheries would be prioritized by the estimated impacts on overfished species. By 2004, begin phasing in VMS or an observer requirement for recreational charter vessels that fish within a conservation area. Vessels would be required to have VMS transceiver unit or an observer on board at all times regardless of the fishery.

Discussion: Requirements for the limited entry fleet under this alternative are the same as alternative 2B. In addition to the requirements under 2B, this alternative would require open access gears that fished in the conservation area to have an operable VMS unit or an observer on board at all times. This is estimated to affect 386 limited entry vessels (Tables 3.3.2.1), 2,881 open access vessels (Table 3.3.2.3) and less than 659 recreational charter vessels (Tables 3.3.4.1).

Alternative 4: All vessels registered to limited entry permits regardless of where fishing occurs; all fishing vessels operating in conservation area. Beginning in 2003, require all trawl and fixed gear vessels registered to a limited entry permit to have either VMS or an observer as specified under Issue 1, Alternatives 3, 4. and 5, before they can fish in the Pacific Coast groundfish fishery. By 2004, begin phasing in VMS or observer requirements for all other fishing vessels that operate in the conservation areas. Fisheries would be prioritized by the estimated impacts on overfished species. Vessels would be required to have VMS transceiver unit or an observer on board at all times regardless of the fishery.

Discussion: Requirements for the limited entry fleet under this alternative are the same as Alternative 2B. Requirements for the open access gears and recreational charter vessels would be the same as Alternative 3. In addition, this alternative would require all other commercial fishing vessels operating in the conservation area to have an operable VMS unit or an observer on board at all times. This is estimated to affect 386 limited entry vessels (Tables 3.3.2.1), 2,881 open access vessels (Table 3.3.2.3), less than 659 recreational charter vessels (Tables 3.3.4.1), and 132 vessels from other commercial fisheries (Table 3.3.2.3).

Alternative 5: All limited entry, open access, and recreational charter vessels regardless of where fishing occurs. Beginning in 2003, require all trawl and fixed gear vessels registered to a limited entry permit to have either VMS or an observer as specified under issue 1, before they can fish in the Pacific Coast groundfish fishery. By 2004, begin phasing in VMS or observer requirements for all open access and recreational charter vessels regardless of where the vessel will be fishing. Fisheries would be prioritized by the estimated impacts on overfished species. Vessels would be required to have VMS unit or an observer on board at all times regardless of the fishery.

Discussion: Requirements for the limited entry fleet under this alternative are the same as Alternative 2B. Requirements for the open access gears and recreational charter vessels would include all vessels that can legally take groundfish, regardless of where they are fishing in relation to the conservation areas. This alternative would allow enforcement to monitor all groundfish vessels throughout the year, regardless of the fisheries in which they participate. This is estimated to affect 386 limited entry vessels (Tables 3.3.2.1), 3,840 open access vessels (Table 3.3.2.3) and 724 recreational charter vessels (Tables 3.3.4.1).

ISSUE 3: VMS RELATED EXPENDITURES -- This issue defines the responsibilities of purchasing, installation, and maintenance of VMS transceiver units, as well as the responsibilities for transmission of reports and data.

Alternative 1: Vessel pays all. Under this alternative the vessel would be responsible for paying all costs associated with purchasing, installing and maintaining the VMS transceiver unit, as well as the costs associated with the transmission of reports and data from the vessel. This alternative would not preclude reimbursement for all or a portion of expenditures at a later point in time if money were available.

Alternative 2: Vessel pays for transceiver. Under this alternative the vessel would be responsible for paying for all costs associated with purchasing, installing and maintaining the VMS transceiver unit. NMFS would pay for transmission of reports and data only.

Alternative 3: NMFS pays for initial transceiver. Under this alternative, NMFS pays or reimburses the vessel owner for all or a portion of the initial VMS transceiver unit. Associated expenses including installation, maintenance and replacement would be paid for by the vessel. Transmission costs would also be paid for by the vessel.

Alternative 4: NMFS pays all. Under this alternative NMFS would be responsible for paying all costs associated with purchasing, installing and maintaining the VMS transceiver unit, as well as the costs associated with the transmission of reports and data from the vessel.

Alternatives that were rejected

Electronic chart plotters have become an increasingly important part of the navigational equipment on many recreational and commercial vessels. Plotters vary widely, ranging from hand-held units with small screens to full color, large screen computer monitor displays and the International Maritime Organization approved Electronic Chart and Information Display Systems. The electronic charts displayed by plotters contain useful information from official charts, issued by the National Oceanographic and Atmospheric Administration (NOAA), and non-official charts such as marina data. Official marine charts issued by NOAA show boundaries of land and water, water depths and contour lines, type, identification and location of aids to navigation, position of channels, danger and prohibited areas and locations of shore-side facilities. Various information from NOAA charts may be absent on some electronic charts. In general, electronic charts are not legal replacements for paper charts.

A chart plotter's greatest value is in its ability to convert the precise but abstract position information supplied by the GPS or Loran into an easily understood picture of the vessel's position in relation to its surroundings. This improves the navigator's situational awareness, his ability to correlate his vessel's position in relation to surrounding land, channel boundaries and various navigation aids and other vessels. Even low cost chart plotters that depict vessel position on a minimal content chart can greatly aid the user in "finding" his vessel's position on the chart being used for navigation. More complex plotters, full detail charts can do much more, including voyage planning, rapid input of waypoints, calculation of distances, courses and preparation of voyage time estimates.

Although plotters are a suitable tool for vessel operators to use to monitor their vessel activity in relation to depth-based management areas, it is not a suitable tool for monitoring fleetwide compliance with closed or restricted areas. The use of plotters as an viable alternative under Issue 1, monitoring systems, was rejected for several reasons including: 1) plotters are not tamper proof -- data could be deleted or false data could be loaded in the memory; 2) not all plotters are capable of storing the information necessary for the enforcement of depth-based management areas; 3) data stored on plotters would not be available until after the vessel returned to port or upon boarding; 4) the accuracy of charts and position information may vary between the different types and brands with some plotters collecting data that is not accurate enough for enforcement purposes; 5) plotters can easily be turned on and off by the vessel operator.